J. of Obst. & Gyn. of India Vol. 51, No. 5 : September/October 2001 Pg 162-164

# Vaginal Hysterectomy by Electrosurgery (An Extraperitoneal Approach)

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**Summary**

The purpose of the study was to evaluate the safety and feasibility of the use of electrosurgery in vaginal hysterectomy operation by an extraperitoneal approach because unipolar system of current causes unintended electrical injury & bipolar system of current spreads to the neighbouring tissues causing thermal injury. Vaginal hysterectomy operation by electrosurgery was carried out on 51 patients for different indications. Patients were followed for 3 months. We found no major intra-operative and post-operative complications. Analgesic drug requirement was less in 88.23% patients. Hospital stay was less than 96 hours in all patients. Shortest hospital stay was 36 hours in 5.88% patients. Therefore electrosurgery could be safely used in vaginal hysterectomy operation for better outcome.

## Objective

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## Introduction

Most of the time high frequency electrocautery is used to vaporise, coagulate, ablate or lyse the fascia, vessels & adhesions or entire myomata during laparotomy or endoscopic procedures in gynaecological surgery. It is well established that unipolar system of current causes unitended electrical injuries to bowel, ureter & vessels (Thompson & Wheeless 1973) if used improperly during laparoscopic surgery, whereas the bipolar system of current used for electrocoagulation does not cause potential injuries associated with capacitative or direct coupling. However there occurs a lateral spread of heat beyond 3-5 mm (Ryder & Hulka 1993) if large grasp of tissue is included between prongs requiring prolonged application of current to the standard end point of no current flow. Conventionally vaginal hysterectomy is performed by using clamps and different suture materials. Often vagina provides a narrow space for clamp application & restricts the movement of the needle holder, the parametrial scarring further endangers the ureter & bladder. Therefore we are afraid of using electrocautery in vaginal hysterectomy. Work has been done on the use of electrosurgery on laparoscopic supracerevical & laparoscopic assisted vaginal hysterectomy. We therefore wanted to use the same

procedure in vaginal hysterectomy using thin monopolar electrode & thin (1.5mm and 3 mm width) laparoscopic bipolar forceps to incise the vaginal mucosa and to coagulate & transect the ligaments vessels during vaginal hysterectomy by an extra peritoneal approach to study its safety.

**Material & Methods**

This was a prospective study in an urban private hospital, with observation of the intraoperative and post operative complications & duration of hospital stay.

Fiftyone surgically fit women between 31-53 years of age, irrespective of parity & obesity, admitted for vaginal hysterectomy between Nov. 1997 and May, 1999, for different benign diseases of uterus (Table 1) were included in study. Uterus size varied from normal to 12 weeks pregnant uterus size. (Table II).

**Table I**
**Indications of Hysterectomy**

| | N=51 | % |
|---|---|---|
| DUB | 19 | 37.25 |
| Fibroid Uterus | 15 | 29.41 |
| Adenomyosis Uterus | 6 | 11.76 |
| Ch. Cervicitis | 8 | 15.68 |
| Intra Uterine polyp | 3 | 5.88 |
| P.I.D | 3 | 5.88 |

N.B. Few patients had more than one cause.

**Table II**
**Uterine size taken up in Hysterectomy.**

| Inweeks | n-51 | % |
|---|---|---|
| 6-8 | 14 | 27.45 |
| 8-10 | 35 | 68.62 |
| 10-12 | 2 | 3.92 |

Vaginal hysterectomy was done under general or spinal anaesthesia using monopolar cutting current 25-30 watts to incise the vaginal mucosa and bipolar coagulation current 35 watts to coagulate the ligaments, vessels, tube on both sides of the uterus except the uterosacral ligaments. Coagulated tissues were transected within the coagulated area.

**Operative procedure**

Vaginal hysterectomy was commenced in the standard manner. The anterior cul-de-sac peritoneum and the posterior cul-de-sac peritoneum were kept intact in the beginning. Holding the incised posterior vaginal wall the operators index finger is then pushed on either side of the uterus splitting the posterior fold of broad ligament. The speculum is then enhanced further. With proper traction on cervical tenaculum and counter traction with bladder retractor anteriorly and speculum posteriorly the ligaments are defined clearly.

The vesicouterine ligament and a small portion of cardinal ligament are coagulated by ordinary bipolar forceps, transected and pushed laterally to push the ureter and bladder forward & outward. The uterosacral ligament thus clearly exposed, is clamped & secured by Vicryl no. 1.

The uterine artery seen clearly is coagulated & transected. Instruments used were long, straight, laparoscopic bipolar forceps (3mm & 1.5mm width). Bipolar forceps is activated for 15 sec. The soft tissue of broad ligament is then pushed with the index finger as far as upto the round lig, without bleeding. The anterior and posterior culde-sac peritoneum were then entered. The round ligaments ovarion ligaments & tubes were electrocoagulated & transected. Occasionally bisection & morcellation of the bulky uterus by scalpel is required to deliver the uterus. Bilateral salpingo-oophorectomy was carried out in 3 cases. Peritoneum left open. Vault suspended at its angles by uterosacral ligs. Vault closed by Vicryl no. 1 suture. Prophylactic antibiotic given routinely. Patients were followed up for 3 months.

**Results**

Main indications of hysterectomy were DUB (37.25%) Fibroid uterus (29.41%). Uterine size was mostly 8-10 wks (68.62%). Bilateral salpingo-oophorectomy was done in 3 cases. Morcellation of the uterus was required in 10 cases (19.60%) to remove it. There was no major intraoperative and post-operative complication. Minor superficial heat burn of the vulval skin was noted in (9.80%) due to the heat of bipolar coagulation (Table-III).

**Table III**
**Intra operative Complications.**

| | N=51 | % |
|---|---|---|
| Electrical burn to bladder wall | 0 | 0 |
| Superficial burn to vulval skin | 5 | 9.80 |
| Heat injury to neighbouring structures | 0 | 0 |
| Uterine artery requiring repeated coagulation | 40 | 78.43 |
| Retraction of Uterine artery | 0 | 0 |
| Blood loss less than 100ml | 39 | 76.47 |
| Blood loss more than 100 ml | 12 | 23.52 |
| Carbon deposition around bipolar forceps | 45 | 88.23 |

N.B. Few patients had more than one complication.

The commonest intraoperative problem

(78.43%) was frequent oozing from the mouth of the coagulated and transected uterine vessel. Frequent carbon deposition on bipolar forceps is a disturbing factor during the procedure. In 76.47% cases blood loss was less than 100ml. None required blood transfusion. There was no major late post-operative complication. (Table IV). Post operative pain was mild in 88.23% cases, moderate in 11.76% requiring less analgesic drugs. Hospital stay was less than 48 hours in 39.21% cases, 96 hours in 47.05% cases & 36 hours in 5.88% cases. (Table V).

**Table IV**
**Post Operative complications**

| | N=51 | % |
|---|---|---|
| Burn ulcer an vulva | 5 | 9.80 |
| Post operative pain (Mild) | 45 | 88.28 |
| Post operative pain (Moderate) | 6 | 11.76 |
| Fever | 0 | 0 |
| Pelvic Cellulitis | 0 | 00 |
| Secondary hemorrhage | 0 | 0 |
| Cystitis | 6 | 11.76 |
| Late Complications | 0 | 0 |

N.B. Few patients had more than one complication

**Table V**
**Post operative Hospital Stay**

| Hours | n=51 | % |
|---|---|---|
| 36 | 3 | 5.88 |
| 48 | 17 | 33.33 |
| 72 | 7 | 13.72 |
| 96 | 24 | 47.05 |

## Discussion

Although monopolar cutting current causes unintended electrical injuries its safe application with required watts of current, exposure of target tissue with adequate retraction of the neighbouring tissue away from activated electrode reduces the chances of injuries in vaginal hysterectomy. Inclusion of only target tissue in bipolar forceps avoids unitended electrical injury.

Splitting of the posterior fold of broad ligament & its retraction exposes the ligaments and uterine artery clearly reducing the fear of the inclusion of the ureter since bipolar coagulation pulls the neighbouring tissue towards the forceps. The isolated uterine artery does not retract back into the parametrium even after transection thus avoiding blind application of the bipolar forceps. Repeated bipolar coagulation is required to seal the mouth of the oozing uterine artery this being the commonest problem.

The narrow space often found between pelvic wall & uterus after the ligation of uterine artery is not a problem. Therefore the number of uteri requiring morcellation before its removal are less. During transection of the round ligaments tubes & ovarian ligaments care should be taken to transect gradually & cautiously because these stumps retract back very fast from the field.

Because bipolar coagulation sterilises the stumps and almost no suture material is left inside the pelvic cavity the severity of inflammatory reaction is less. The coagulation of the stumps causes complete damage of the nerve ending hence less postoperative pain & shorter hospital stay.

## Conclusion

Electrosurgery in vaginal hysterectomy is therefore safe if used properly. Extraperitoneal approach increases its safety.

## References

1. Ryder RM. Hulka JF: J. Report, Med. 38:594, 1993
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